Remarks

Claims 29, 30, and 32-40 were previously pending in the present application. By way of the foregoing amendment, claims 31, 34, and 36-38 have been cancelled without prejudice or disclaimer. Claims 29, 32, 35, and 40 have been amended. Claims 41-46 have been added. Accordingly, upon entry of the foregoing amendment, claims 29, 30, 32, 33, 35, and 39-46 are pending.

Support for the claim amendments and new claims can be found in the original specification, *inter alia*, as follows:

Amended claim 29 – page 4, lines 31 – 32, page 5, lines 8-9;

Amended claim 32 - page 5, lines 8-9;

Amended claim 35 – page 7, lines 8-10;

Amended claim 40 – page 5, lines 1-2;

New claim 41 – original claim 1 and page 4, lines 31 – 32, page 5, lines 8-9;

New claim 42 – original claim 2;

New claim 43 – original claim 3;

New claim 44 – original claim 4;

New claim 45 – original claim 8; and

New claim 46 – original claim 9.

Accordingly, Applicants respectfully submit that no new matter has been added.

Reconsideration of all outstanding objections and rejections is respectfully requested in light of the above amendments and in light of the comments that follow.

Telephonic Interview of February 13, 2004

Applicants thank the Examiner for participating in a telephone interview on February 13, 2004. During the interview, Applicants presented exhibits that illustrated the differences between the disclosure of Harter (US 5,696,782) and Applicants' claimed invention. Applicants also discussed the previous claim terminology (i.e., "frequency modified"). Applicants appreciate the Examiner's helpful suggestions and comments.

Rejections under 35 U.S.C. § 112, first paragraph

In the Office Action, claims 34, 35, and 38 were rejected under 35 U.S.C. § 112, first paragraph. Applicants respond as follows.

Without acquiescing to the propriety of the rejections, and in order to reduce issues, Applicants have cancelled claims 34 and 38 without prejudice, rendering those 112, first paragraph rejections moot. Regarding claim 35, Applicants have amended the claim to recite "wherein a frequency of the wavelength modulated signal is about 100 MHz or less." Applicants respectfully submit that this feature is supported in the specification at page 7, lines 8-10. Accordingly, Applicants respectfully request reconsideration and withdrawal of the 112, first paragraph rejections.

Rejections under 35 U.S.C. § 112, second paragraph

In the Office Action, claims 29-30 and 32-40 were rejected under 35 U.S.C. § 112, second paragraph. Applicants respond as follows.

Applicants have amended claim 29 to recite a "a constant amplitude, wavelength modulated optical signal." In addition, the dependent claims have been amended to refer to the "wavelength modulated signal," for purposes of consistency. Accordingly, Applicants respectfully request reconsideration and withdrawal of the 112, second paragraph rejections.

§ 102 Rejections

Claims 29, 30, 34, 35, 37, and 39 were rejected under 35 USC § 102(b) as being anticipated by Harter (US 5,696,782). Applicants respond as follows.

With respect to claims 29, 30, 34, 35, 37, and 39, Applicants respectfully submit that Harter does not anticipate these claims because Harter does not disclose, teach, or suggest a "constant amplitude, wavelength modulated" signal directed to a dispersive element. Also, Harter does not disclose, teach, or suggest "matching a chirp of the dispersive element with a cycle of the constant amplitude, wavelength modulated signal," as is recited in amended claim 29. Furthermore, Harter does not teach or suggest the use of the claimed "long" fiber Bragg grating, for the reasons stated in Applicants' response dated September 22, 2003.

As is described in the specification, the "laser is controlled in such a way as to modulate the center wavelength of the DBR section to generate a constant amplitude, frequency modulated

(FM) optical wave." (See page 4, lines 31-32, emphasis added). In other words, a constant amplitude, wavelength modulated optical signal is sent to the claimed dispersive element in order to generate a pulse train.

In contrast, Harter only suggests sending a pulsed signal to a fiber Bragg grating dispersive element. Harter's source does not provide a constant amplitude, wavelength modulated optical signal as is claimed. For example, Harter's Figs. 4-7 all show pulsed sources being sent to a compressor. See e.g., Harter, col. 7, line 22 et seq., "chirped pulses were obtained by frequency-chirping of the emission of tunable laser diode 600." Harter mentions cw systems at col. 4, line 63, et seq. only in the context of providing cw amplification through conventional single mode fiber pumping schemes and double-clad fiber pumping schemes, not as a signal source for generating a pulse train. Accordingly, Harter does not disclose, teach or suggest sending a constant amplitude, wavelength modulated signal to a long fiber Bragg grating dispersive element.

Moreover, as Harter only addresses the compression of pulsed sources, Harter does not address or contemplate matching a chirp of the dispersive element with a cycle of the wavelength modulated optical signal. As is described in the application (see page 7, lines 2-6):

> The efficiency could be made to approach the theoretical 50% for sinusoidal frequency modulation if the fiber Bragg grating were designed with the appropriate spatial chirp (spatial chirp refers to the property of a non-uniform Bragg grating which allows it to reflect different wavelengths at different positions along the grating - the spatial frequency of the grating planes is chirped).

In contrast, Harter fails to disclose, teach, or suggest the above claimed "matching" feature. Instead, in Fig. 6, Harter only describes the use of a passively mode-locked fiber oscillator pulse-source that is fed to a compressor 670, which can be a diffraction grating pair or a chirped in-fiber Bragg grating.

Accordingly, Applicants respectfully submit that the rejection of claims 29, 30, 34, 35, 37, and 39 under 35 USC § 102(b) as being anticipated by Harter has been overcome and should be withdrawn.

§ 103 Rejections

Claims 36 and 38 were rejected under 35 USC § 103(a) as being unpatentable over Harter in view of Galvanauskas (US 5,633,885). These rejections are now moot as claims 36 and 38 have been cancelled without prejudice.

New Claims

Claims 41-46 are sought to be added by way of the foregoing amendment. Applicants respectfully submit that, for at least the reasons stated above, the cited references do not disclose, teach, or suggest "impinging the CW FM signal on a dispersive element, said dispersive element being adapted to compress the signal in time, wherein an output signal from the dispersive element is a pulse train." As mentioned above, Harter instead suggests sending a pulsed signal to a fiber Bragg grating dispersive element.

Accordingly, Applicants respectfully submit that the pending claims are patentable over the references of record.

Conclusion

In view of the above, it is respectfully submitted that the application is in condition for allowance. Reconsideration of the application is requested. Please contact the undersigned should there be any questions or in order to expedite prosecution.

Respectfully submitted,

2/20/04
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